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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/580,874	05/30/2000	Michel Ladang	192592USONPP-CONT	1709

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EXAMINER
GOFF II, JOHN L

ART UNIT	PAPER NUMBER
1733	

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Please find below and/or attached an Office communication concerning this application or proceeding.

MK-15

Office Action Summary	Application No. 09/580,874	Applicant(s) LADANG ET AL.	
	Examiner John L. Goff	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2002 (Amendment B)* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10,13,15,16,18 and 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10,13,15,16,18 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This action is in response to Amendment B filed on 10/24/02. All previous objections to the claims have been overcome.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 10, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hitchcock (U.S. Patent 5,087,395).

Hitchcock is directed to the continuous expansion of a sheet of polyolefin foam. Hitchcock teaches a mixture of a thermoplastic resin (preferably polyethylene or an ethylene copolymer), a heat-decomposable blowing agent, and a crosslinking agent extruded into a desired shape such as a sheet (Column 4, lines 15-20 and 39-41). The surface of the sheet is further crosslinked offline by a suitable radiation source up to ¼ of an inch with the crosslinking occurring perpendicular to a direction of expansion of the foam (Column 1, lines 23-27 and Column 2, lines 59-63). The surface crosslinked sheet is fed to a preheating chamber and is raised to a temperature such that the sheet begins to foam and crosslink (due to the crosslinking agent) when passed into the foaming chamber (Column 2, lines 55-59 and Column 3, lines 42-47). The sheet undergoes expansion in its thickness while in the foaming chamber to form a foamed sheet (Figure 1 and Column 3, lines 42-47). A set of pull rollers advance the sheet through the heating and foaming chambers (Figure 1). The pull rollers advance the sheet at a

rate of speed roughly equivalent to the forward rate of the sheet in order to maintain an even pull (tension) across the face of the sheet (Column 4, lines 5-10). The mixture of resin, blowing agent, and crosslinking agent is essentially ethylene copolymer or at least 20% by weight polyethylene (Column 5, lines 30-35 and Column 6, lines 22-27). It is noted Hitchcock teaches expanding the foam in more than one direction (Column 5, lines 37-39 and 58-60). However, the method steps taught by Hitchcock, i.e. crosslinking the face of the polyolefin sheet prior to foaming, are the same as those currently claimed by applicant, and thus, one would expect the results of both applicant's invention and Hitchcock to be the same, i.e. substantially unidirectional expansion of the foam.

4. Claims 10, 15, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Noda et al. (U.S. Patent 4,203,815).

Noda et al. are directed to a process for producing a crosslinked and foamed resin sheet. Noda et al. teach a method for producing the sheet comprising extruding a polyolefin foam mixture into a sheet, crosslinking the surface and/or body of the sheet, and expanding the sheet to produce a crosslinked and foamed resin sheet (Column 5, lines 29-31 and 3-5 and Column 6, lines 27-29 and 43-48). Noda et al. teach the polyolefin foam comprises polyethylene (at least 50% by weight with a density of 0.910 to 0.940) (Column 3, lines 1-15, 18-22, and 60-64). Noda et al. further teach surface crosslinking one or both faces of the sheet (Column 6, lines 37-38). It is noted Noda et al. are silent as to a unidirectional expansion. However, the method steps taught by Noda et al. are the same as those currently claimed by applicant, and thus, one would expect the results of both applicant's invention and Noda t al. to be the same, i.e. substantially unidirectional expansion of the foam.

5. Claims 10 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Atchison et al. (U.S. Patent 3,817,851).

Atchison et al. are directed to a method of producing radiation crosslinked polyolefin foam. Atchison et al. teach an extruded sheet comprising crosslinking agent (≤ 10 weight percent), foaming agent (≤ 20 weight percent), and polyolefin (inherently ≥ 20 weight percent) (Column 2, lines 46-48 and 51-60 and Column 3, lines 45-49). Atchison et al. teach exposing the sheet to radiation and subsequently, expanding the sheet. It is noted Atchison et al. are silent as to a unidirectional expansion (Column 3, lines 1-10. However, the method steps taught by Atchison et al. are the same as those currently claimed by applicant, and thus, one would expect the results of both applicant's invention and Atchison et al. to be the same, i.e. substantially unidirectional expansion of the foam.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 10, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoda et al. (U.S. Patent 3,608,006) in view of Hitchcock.

Hosoda et al. teach the unidirectional expansion of a polyolefin sheet in its thickness wherein a support is adhered to the surface of the sheet prior to expansion. The support is adhered perpendicular to the direction of expansion. The method taught by Hosoda et al. is useful for forming foamed insulation panels or the like. Hosoda et al. are silent as to a teaching on surface cross-linking one or both faces of the foam product prior to expansion. However, it is known in the art to form polyolefin foam sheets with surface cross-linked foams for use in the health care industry as shown above by Hitchcock (Column 1, lines 27-31 of Hitchcock). One of ordinary skill in the art at the time the invention was made reading Hosoda et al. in view of Hitchcock would have readily appreciated surface crosslinking the foam product to form a support perpendicular to the direction of expansion rather adhering a support to the foam product as a means to ensure unidirectional expansion of the foam when a soft, surface crosslinked facing is required as part of the final product.

Hosoda et al. are directed to a process for manufacturing a cross-linked polyolefin foam sheet expanded only in its thickness by adhering supports to one or both sheet faces prior to expansion. Hosoda et al. teach a mixture of polyethylene, blowing agent, and cross-linking agent moulded into the form of a sheet (Figure 1 and Column 1, lines 9-12 and Column 5, lines 10-16). A cloth or paper support is adhered to the sheet perpendicular to the direction of expansion (Figure 1 and Column 1, lines 13-14 and Column 5, lines 16-18). A conveyor carries the sheet into an oven where heat is applied to cross-link and expand the sheet (Figure 1 and Column 4, lines 7-8 and Column 5, lines 19-22). The sheet expands only in its thickness owing to its

adhesion with the support (Column 2, lines 7-10). The moulded mixture is at least 20% by weight polyethylene (Column 5, lines 10-14).

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al. as applied above in paragraph 4, and further in view of Hitchcock.

Noda et al. as applied above teach all of the limitations in claim 13 except for a teaching on expanding the foam in a continuous operation. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated producing the crosslinked and foamed resin sheet taught by Noda et al. using a continuous process as was well known and conventional in the art as shown above by Hitchcock as only the expected results would be achieved.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Atchison et al. as applied above in paragraph 5, and further in view of Hitchcock.

Atchison et al. as applied above teach all of the limitations in claim 13 except for a teaching on expanding the foam in a continuous operation. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated producing the radiation crosslinked foam sheet taught by Atchison et al. using a continuous process as was well known and conventional in the art as shown above by Hitchcock as only the expected results would be achieved.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hitchcock as applied above in paragraph 3, and further in view of Hurley et al. (U.S. Patent 5,883,145).

Hitchcock as applied above teaches all of the limitations in claim 16 except for a teaching on forming the polyethylene or ethylene copolymer by metallocene catalysis with a density of at

most 0.92 g/cm^3. Hurley et al. are directed to manufacturing crosslinked polyolefin foam. Hurley et al. teach that it was known in the art to form polyolefin foams of very low density polyethylene (VLDPE) (density of 0.88 to 0.92 g/cm^3) when a flexible foam is desired (Column 1, lines 52-58). However, these known foams tend to be of low quality due to melt fracture (Column 1, lines 61-64). The melt fracture occurring due to forming the VLDPE with a low molecular weight (Column 1, lines 58-61). Hurley et al. teach using metallocene catalysts as a means to form VLDPE of a controlled molecular weight ensuring the molecular weight of the VLDPE is high enough to preclude melt-fracture (Column 2, lines 16-22 and 52-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the polyethylene taught by Hitchcock using a metallocene catalyst as suggested by Hurley et al. to form a high quality flexible polyethylene (density of 0.88 to 0.92 g/cm^3) that is not subject to melt fracture.

12. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al. as applied above in paragraph 4, and further in view of Hurley et al. (U.S. Patent 5,883,145).

Noda et al. as applied above teach all of the limitations in claim 16 except for a teaching on forming the polyethylene or ethylene copolymer by metallocene catalysis with a density of at most 0.92 g/cm^3. Hurley et al. are directed to manufacturing crosslinked polyolefin foam. Hurley et al. teach that it was known in the art to form polyolefin foams of very low density polyethylene (VLDPE) (density of 0.88 to 0.92 g/cm^3) when a flexible foam is desired (Column 1, lines 52-58). However, these known foams tend to be of low quality due to melt fracture (Column 1, lines 61-64). The melt fracture occurring due to forming the VLDPE with a low molecular weight (Column 1, lines 58-61). Hurley et al. teach using metallocene catalysts as a

means to form VLDPE of a controlled molecular weight ensuring the molecular weight of the VLDPE is high enough to preclude melt-fracture (Column 2, lines 16-22 and 52-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the polyethylene taught by Noda et al. using a metallocene catalyst as suggested by Hurley et al. to form a high quality flexible polyethylene (density of 0.88 to 0.92 g/cm^3) that is not subject to melt fracture.

13. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Atchison et al. as applied above in paragraph 5, and further in view of Hurley et al. (U.S. Patent 5,883,145).

Atchsion et al. as applied above teach all of the limitations in claim 16 except for a teaching on forming the polyethylene or ethylene copolymer by metallocene catalysis with a density of at most 0.92 g/cm^3. Hurley et al. are directed to manufacturing crosslinked polyolefin foam. Hurley et al. teach that it was known in the art to form polyolefin foams of very low density polyethylene (VLDPE) (density of 0.88 to 0.92 g/cm^3) when a flexible foam is desired (Column 1, lines 52-58). However, these known foams tend to be of low quality due to melt fracture (Column 1, lines 61-64). The melt fracture occurring due to forming the VLDPE with a low molecular weight (Column 1, lines 58-61). Hurley et al. teach using metallocene catalysts as a means to form VLDPE of a controlled molecular weight ensuring the molecular weight of the VLDPE is high enough to preclude melt-fracture (Column 2, lines 16-22 and 52-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the polyethylene taught by Atchison et al. using a metallocene catalyst as suggested by Hurley et al. to form a high quality flexible polyethylene (density of 0.88 to 0.92 g/cm^3) that is not subject to melt fracture.

14. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoda et al. and Hitchcock as applied above in paragraph 8, and further in view of Hurley et al. (U.S. Patent 5,883,145).

Hosoda et al. and Hitchcock as applied above teach all of the limitations in claim 16 except for a teaching on forming the polyethylene or ethylene copolymer by metallocene catalysis with a density of at most 0.92 g/cm^3. Hurley et al. are directed to manufacturing crosslinked polyolefin foam. Hurley et al. teach that it was known in the art to form polyolefin foams of very low density polyethylene (VLDPE) (density of 0.88 to 0.92 g/cm^3) when a flexible foam is desired (Column 1, lines 52-58). However, these known foams tend to be of low quality due to melt fracture (Column 1, lines 61-64). The melt fracture occurring due to forming the VLDPE with a low molecular weight (Column 1, lines 58-61). Hurley et al. teach using metallocene catalysts as a means to form VLDPE of a controlled molecular weight ensuring the molecular weight of the VLDPE is high enough to preclude melt-fracture (Column 2, lines 16-22 and 52-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the polyethylene taught by Hosoda et al. as modified by Hitchcock using a metallocene catalyst as suggested by Hurley et al. to form a high quality flexible polyethylene (density of 0.88 to 0.92 g/cm^3) that is not subject to melt fracture.

15. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hitchcock as applied above in paragraph 3, and further in view of Noda et al.

Hitchcock as applied above teaches all of the limitations in claims 18 and 19 except for a specific teaching on crosslinking only one surface. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated crosslinking the foam sheet

taught by Hitchcock on only one face as was known in the art as shown above by Noda et al. as only the expected results would be achieved.

16. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Atchison et al. as applied above in paragraph 5, and further in view of Noda et al.

Atchison et al. as applied above teach all of the limitations in claims 18 and 19 except for a specific teaching on crosslinking only one surface. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated crosslinking the radiation crosslinked foam sheet taught by Atchison et al. on only one face as was known in the art as shown above by Noda et al. as only the expected results would be achieved.

17. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoda et al. and Hitchcock as applied above in paragraph 8, and further in view of Noda et al.

Hosoda et al. and Hitchcock as applied above teach all of the limitations in claims 18 and 19 except for a specific teaching on crosslinking only one surface. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated crosslinking the foam sheet taught by Hosoda et al. as modified by Hitchcock on only one face as was known in the art as shown above by Noda et al. as only the expected results would be achieved.

Response to Arguments

18. Applicant's arguments filed 6/3/02 have been fully considered but they are not persuasive.

Applicant argues that Hitchcock does not teach unidirectional expansion. Applicant argues Hitchcock permits expansion not only in the thickness but also in the length and width

direction (See examples 1 and 2 of Hitchcock). The examiner agrees Hitchcock teaches expansion at least in two directions (thickness and width). However, it is unclear how the method taught by Hitchcock differs from that taught by applicant? It is well known in the art to crosslink the surface and/or body of the foam sheet prior to expansion as evidenced by Hitchcock, Nada et al., and Atchison et al. Thus, it appears the method of foaming taught by Hitchcock, Nada et al., and Atchison et al. is substantially the same as that taught by applicant, i.e. each reference suggests crosslinking the surface and/or body of the foam sheet prior to expansion, and one would expect the results of applicant's invention, Hitchcock, Nada et al., and Atchison et al. to be the same, i.e. substantially unidirectional expansion of the foam.

It is noted this action is made final due to applicant's amendment. In particular, prior to Amendment B claim 10 disclosed two embodiments a or b. Amended claim 10 now discloses only embodiment b.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **703-305-7481**. The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on 703-308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

John L. Goff
December 18, 2002

Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700